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NOTES ON GEOGRAPHIC DISTRIBUTION

Cyanocharax alburnus (Hensel, 1870) (Characiformes: Characidae): First distribution record in Argentina

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ABSTRACT: This note reports the presence of *Cyanocharax alburnus* in the Argentinian Mesopotamia. This represents the southern distributional limit for the species in South America and the first record for Argentina's fresh water fish fauna.

The genus *Cyanocharax* Malabarba and Weitzman, 2003, included in the family Characidae, comprises small-sized species: *C. alburnus* (Hensel, 1870), *C. alegretensis* Malabarba and Weitzman, 2003; *C. dicropotamicus* Malabarba and Weitzman, 2003; *C. itaimbe* Malabarba and Weitzman, 2003; *C. lepiclastus* Malabarba, Weitzman and Casciotta, 2003; *C. tipiaia* Malabarba and Weitzman, 2003 and *C. uruguayensis* (Messner, 1962) known only for the Atlantic drainage basins in southeastern Brazil, in the states of Rio Grande do Sul and Santa Catarina and in the Uruguay River drainage basin in Brazil, Uruguay and Argentina. These characids are identified by the following diagnostic characters: presence of two unbranched and eight branched rays in the dorsal fin; absence of insemination; absence of caudal and anal glands or specialized organ; presence of one unbranched and six branched rays in the pelvic fin; possession of clearly anterior mouth with unspecialized teeth, and lack of ventrally located mouth with modified maxillary, premaxillary and dentary bones; branched rays in the anal fin ranging from 21 to 35; and incompletely toothed maxilla, with 2 to 8 teeth (Malabarba and Weitzman 2003).

In November 2004, we collected 4 specimens of *C. alburnus* (Figure 1, Table 1) from Villaguay creek in the beach sector at 31°55'00" S, 59°03'00" W, Villaguay Department, part of the Gualeguay River basin in Entre Ríos province, scientific permit LP N°4892/70, (Figure 2).

FIGURE 1. *Cyanocharax alburnus*, ILPLA 2172, female, 38.1 mm, Villaguay creek, Entre Ríos Province, Argentina.

Villaguay creek is a relatively extensive watercourse, with some sectors about 50 m wide and pools over 2 m deep. The banks are vegetated with grasses and other plants, and the bottom consists of mud and clay. Entre Ríos province represents, along with the rest of the Mesopotamic region, one of the areas of highest biodiversity in Argentina (López *et al*. 2005).

The specimens we collected in Villaguay creek were identified as *C. alburnus* by the possession of two unbranched and eight branched rays in the dorsal fin, one unbranched and six branched rays in the pelvic fin, four unbranched and 20-24 branched rays in the anal fin, total number of scales in lateral-line row 37-38, scale rows between dorsal-fin and lateral line 5, scale rows between lateral line and pelvic-fin origin 3 and unpigmented adipose fin. Malabarba and Weitzman (2003) diagnose *C. alburnus* by the presence of a complete series of 36 to 39 perforated lateral-line scales, a character that sets it apart from those species with interrupted lateral line (*C. alegretensis, C. lepiclastus, C. tipiaia* and *C. uruguayensis*). Additionally, the presence of an unpigmented adipose fin distinguishes it from *C. dicropotamus* and *C. itaimbe.*

FIGURE 2. Habitat of *Cyanocharax alburnus*, Villaguay creek, Entre Ríos Province, Argentina.

Table 1. Morphometric and meristic data of *Cyanocharax alburnus* from Argentina.

CHARACTER	Low	High	Mean	SD
Standard length (mm) (SL)	35.7	39.9	38.0	1.74
As a percentage of SL				
Snout to anal-fin origin	58.4	60.8	59.6	0.99
Snout to dorsal-fin origin	50.9	53.7	52.7	1.23
Snout to pelvic-fin origin	43.2	44.0	43.7	0.38
Dorsal- fin base length	11.0	12.1	11.7	0.51
Anal- fin base length	29.4	31.9	30.7	1.09
Caudal peduncle length	12.2	14.3	13.3	0.87
Caudal peduncle depth	10.1	11.4	10.9	0.62
Depth at dorsal-fin origin	28.9	30.9	29.9	0.84
Dorsal-fin height	21.6	25.7	23.1	1.82
Pelvic-fin length males	16.7	17.7	17.2	0.47
Pelvic-fin length females	13.4	13.4	13.4	0.00
Pectoral-fin length	19.7	23.4	22.1	1.73
Bony head length	22.1	23.6	22.9	0.61
As a percentage of HL				
Snout length	23.3	27.1	25.4	1.79
Upper jaw length	38.4	42.1	39.5	1.74
Horizontal eye diameter	32.1	38.4	35.9	3.00
Least interorbital width	31.6	36.8	33.2	2.45
Counts				
Dorsal-fin rays	ii,8	ii,8	ii,8	0.00
Pectoral-fin rays	10	12	11	0.96
Pelvic-fin rays	i,6	i,6	i,6	0.00
Anal-fin rays	19	24	22	2.16
Scales in lateral line	37	38	38	0.58
Scales rows between dorsal-fin origin and lateral line	5	5	5	0.00
Scales rows between lateral line and pelvic-fin origin	3	3	3	0.00
Predorsal scales	11	13	12	0.96
Scale sheath on anal-fin base	5	8	7	1.26
Outer premaxillary teeth	4	4	4	0.00
Inner premaxillary teeth	4	5	5	0.58
Maxillary teeth	2	5	4	1.26
Dentary teeth	4	4	4	0.00
Smaller dentary teeth	7	9	8	1.15

According to Malabarba and Weitzman (2003), *Cyanocharax* species have pelvic- and anal-fin hooks, suggesting they belong to a clade of South American characiforms with fin hooks. We also observed the presence of bony hooks on the dorsal fin.

These records represent the southernmost limit for this species (Figure 3); according to the biogeographical proposal of López *et al*. (2008), they are located within the Great Rivers Province.

The examined specimens are deposited at Instituto de Limnología "Dr. Raúl A. Ringuelet" (ILPLA) and Museo de La Plata (MLP). We also examined specimens from the collection of the Museu de Ciências e Tecnología PUCRS, Brazil.

Identifications were made using Malabarba and Weitzman (2003). Measurements to the nearest 0.01 mm were made using a digital caliper following Fink and Weitzman (1974). Osteological observations were made on one specimen cleared and stained (c &s) for bone and cartilage following the protocol by Taylor and Van Dyke (1985).

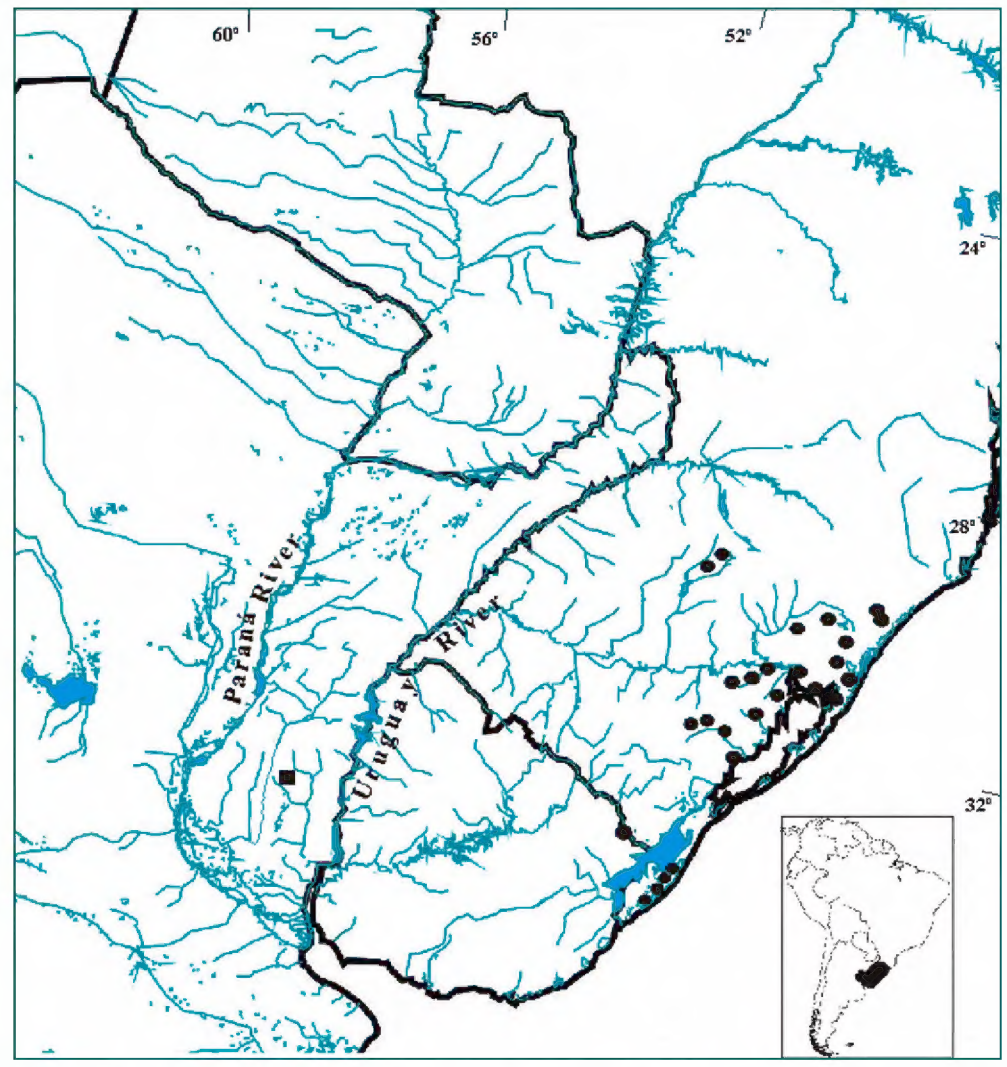

Figure 3. Geographic distribution of *Cyanocharax alburnus*, black square: Villaguay creek, Entre Ríos Province, Argentina and black circle: localities cited in the literature (Malabarba 1983).

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Appendix 1. Museum records of species analyzed. ILPLA: Instituto de Limnología "Dr. Raúl A. Ringuelet" (CONICET-UNLP), La Plata, Buenos Aires, Argentina, MLP: Museo de La Plata, Buenos Aires, Argentina and MCP: Pontifícia Universidade Católica do Rio Grande do Sul Museu de Ciências e Tecnologia, Porto Alegre RS, Brasil

Cyanocharax alburnus: Argentina: ILPLA 2172, 3 (1c&s), 35.7-38,33 (37.4) mm SL, Entre Ríos Province, Department Villaguay, Gualeguay River basin, Villaguay creek on the beach area of Villaguay creek, 31°55'00" S, 59°03'00" W, Col. A. Miquelarena, H. López, R. Menni and L. Protogino, 06/11/04; MLP 10177, 39.9 mm SL, the same data as above and Brazil: MCP 7054, 10, 47.0-58.5 (54.2) mm SL, América do Sul, Rio

Grande do Sul, Guiaba, Lago Guaíba na Praia das Pombas, 30°20'40" S, 51°02'29" W, Col. E.P. Lerner, L.R. Malabarba and I.A. Costa, 09/07/85; MCP 7066, 6, 33.4-39.6 (36.1) mm SL, América do Sul, Rio Grande do Sul, Tramandai, Rio Maquiné, junto á foz na lagoa dos Quadros, 29°44'00" S, 50°10'00" W, Col. Pescadores da EEPLQ, 26/09/84 and MCP 40492, 5, 50.0-57.0 (54.0) mm SL, América do Sul, Rio Grande do Sul, Jacuí, rio Cadeia, abaixo da cachoeira, ponte Farroupilha, estrada Walachai Joanita (localidade de rio Loch), 29°29'43" S, 51°02'50" W, Col. C.A. Lucena, Z.M. Lucena, V.A. Bertaco and T.P., 22/03/06.

Cyanocharax lepiclastus: Argentina: ILPLA 1689, 10, 32.3-44.6 (37.6) mm SL, Misiones Province, Department San Pedro, Fortaleza stream, 26°46'00" S, 54° 10'00" W, on the bridge of RP 21, from Paraiso about 7 Km down to the Salto de Moconá (border between San Pedro-Guaraní Departments), Uruguay River basin; Col.: R. Filiberto *et al.*; 07/01/01.

Cyanocharax uruguayensis: Argentina: ILPLA 1598, 39.2 mm SL, Misiones Province, Department San Pedro, Salto Horacio and Pepirí Miní stream, 27°15'00" S, 53°46'00" W, at the end of RP 21, in the camping area of Salto del Moconá, Uruguay River basin; Col.: R. Filiberto *et al.*; 07/01/01; ILPLA 1688, 5, 28.0-41.9 (35.0) mm SL, Argentina, Misiones Province, Department Apóstoles, Chirimay Miní stream, 27°52'00" S, 55°48'00" W, under the bridge of RP 105 from San José to Apóstoles, Uruguay River basin; Col.: R. Filiberto *et al.,* 08/01/01.